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| 09/584,308 | 05/31/2000 | Kenneth W. Fernald | CYGL-24,696 | 2221 |

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| ART UNIT | PAPER NUMBER |
|---|---|
| 2181 | |

DATE MAILED: 10/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/584,308 | FERNALD ET AL. | |
| | Examiner | Art Unit | |
| | Justin I. King | 2181 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-45 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-45 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☒ Interview Summary (PTO-413) Paper No(s). 6 .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Claim Objections*

1. Claims 3 and 7 are objected to because of the following informalities: Claims 3 and 7 state "therethrough" on the claim 3's second line and claim 7's second line. The "therethrough" should be two separate words. Appropriate correction is required.

2. Claim 28 is objected to because of the following informalities: Claim 28's first and second lines claim that "*ones* of said routing cells *each have* a priority encoding circuit". This statement is indefinite with grammatical error. Appropriate correction is required.

3. Claim 31 is objected to because of the following informalities: Claim 31's first line claims "a circuit in *ones* of said routing cells". Applicant may have meant "*one*" instead of "*ones*". Appropriate correction is required.

4. Claim 37 is objected to because of the following informalities: Claim 37's second line claims a "*disable signal*" for "enabling other routing cells". It is conventional to call such signal an "*enable signal*" rather than a "*disable signal*". Appropriate correction is required.

5. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 15's limitation is stated in claim 14's lines 10-11.

### *Claim Rejections - 35 USC § 112*

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 4, 8, and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 is recites the limitation "different destinations" and "a signal" in claim 4's second line. Applicant claims the "a signal" is a higher priority signal and the "different destinations" are the destinations previously assigned to the higher priority signal. Corrections on the claim language are needed to truly reflect applicant's intended claim scope. Examiner will examine this claim based on applicant's intended scope according to a phone interview on September 25, 2002.

Claim 8 is recites the limitation "said routing" in claim 8's second line. There is insufficient antecedent basis for this limitation in the claim.

Claim 29 is recites the limitation "the disabled routing cells" in claim 29's first line. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh et al. (U.S. Patent No. 5,559,971) in view of Tower et al. (U.S. Patent No. 5,392,446).

Referring to claim 1: Hsieh discloses a triangular crossbar as a method of coupling plurality of signals to a plurality of destinations (column 1, lines 50-65). Hsieh's crossbar couples the signals to a routing circuit so that one of the signals can be routed to different destinations. However, Hsieh does not explicitly assign or associate priority to each signal. Towner discloses a cluster-signal-processor architecture with a crossbar. Tower teaches one to route signals to respective destinations according to the priority assigned to said signals (column 14, lines 9-10). Hence, it would have been obvious to one having ordinary skill in the computer art to adapt Tower's teaching onto Hsieh because the crossbar's signal's priority setting enhances the overall system performance.

Referring to claim 2: Claim 2 is rejected over Hsieh in view of Tower as stated above; furthermore, Tower teaches one to assign priority to each one of crossbar's communication port. In combining with signal's priority, it is said Tower teaches one to assign a priority to each destination so that a highest priority signal is coupled by the routing circuit to a highest priority destination.

Referring to claim 4: Claim 4 is rejected over Hsieh in view of Tower as stated above; furthermore, an "Official Notice" is taken on the following: it is well known to one that a lower priority request will be routed to the next available port in an access-switching arbitration scheme. For an example, a telephone switchbox handles incoming calls with FIFO priority fashion. Each telephone switchbox has several input ports, and the incoming phone call will be routed to the first available port. When the previous request releases the port, the current request can be routed to that freed port according to the assigned priority; and the port is equivalent to the claimed destination. In addition, in a multiple-bus arbitration scheme, it is also known to assign priority to each bus and signal; such that a signal can be routed to the next highest priority and available bus; and the bus is equivalent to the claimed destination. Hence, it is said it would have been obvious to shift lower priority signals to a higher priority destination, which is freed by a previous higher priority signal.

Referring to claim 5: Claim 5 is rejected over Hsieh in view of Tower as stated above; furthermore, an "Official Notice" is taken on the following: although Tower does not explicitly discloses that the communication ports' priorities are arranged sequentially, it is a common practice to assign any values with sequence.

Referring to claim 6: Claim 6 is rejected over Hsieh in view of Tower as stated above; furthermore, Hsieh discloses the 32- port triangular crossbar to interconnect 4 bi-directional 8-bit buses. Hence, Hsieh's crossbar includes routing signals in a bi-directional manner.

Referring to claim 7: Claim 7 is rejected over Hsieh in view of Tower as stated above; furthermore, Tower teaches one to assign priority to each crossbar's communication port

(column 13, lines 28-29). Since each port has a priority setting, the path between the highest priority input port to the highest priority output port is said to be the priority route.

Referring to claim 8: Claim 8 is rejected over Hsieh in view of Tower as stated above; furthermore, it is inherent for Tower's architecture must have a logic to carry out the Tower's claimed priority setting, and it is both Hsieh and Tower's purpose to route digital signals through the circuit. Hence, it is said the prior arts use digital logic to carry out the routing tasks.

Referring to claim 9: Claim 9 is rejected over Hsieh in view of Tower as stated above; furthermore, Hsieh's triangular crossbar has routing cells arranged in row and column (column 1, lines 50-65), such that it is said Hsieh's crossbar routing circuit routes a signal through a plurality of routing cells arranged in at least one row and in at least one column, from an input of the routing circuit to an output of the routing circuit.

Referring to claim 10: Claim 10 is rejected over Hsieh in view of Tower with the same rejecting argument as stated above for claims 4 and 5.

Referring to claim 11: Claim 11 is rejected over Hsieh in view of Tower as stated above; furthermore, when a signal is transmitted to one particular port on one particular routing path, the routing cells on the path cannot convey other signal to the same port. Therefore, the routing circuit inherently generates a signal or a flag to prevent the cells on the path to convey any other signals. In addition, because the routing cells on the path are located to each other, these routing cells are neighbor routing cells. Hence, it is said that Hsieh's first routing cell transfers a signal coupled there to an output of the routing circuit, and further generates a control signal to disable neighbor routing cells.

Referring to claim 14: Claim 14 is rejected over Hsieh in view of Tower with the same argument as stated above for claims 10 and 11.

Referring to claim 15: Claim 15 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 9.

Referring to claim 16: Claim 16 is rejected over Hsieh in view of Tower as stated above; furthermore, Hsieh's triangular crossbar has columns and rows, and the signals are input into the crossbar's routing cells in different rows, and extracting signals from output routing cells arranged in different columns (column 1, lines 50-65).

Referring to claim 17: Claim 17 is rejected over Hsieh in view of Tower as stated above; furthermore, a higher priority signal will be more likely to obtain its requested input port and output port, and a lower priority signal will only obtain the currently available ports. In a event of competing for a port between a lower priority signal and a higher priority signal, the lower priority signal will be forced to wait or to move to the next available port; such that it is said that a lower priority signal can be routed to a greater number of outputs than a higher priority signal can be.

Referring to claim 18: Claim 18 is rejected over Hsieh in view of Tower with the same arguments as stated above for claims 4 and 5.

Referring to claim 19: Claim 19 is rejected over Hsieh in view of Tower with the same arguments as stated above for claims 4 and 5.

Referring to claims 20-21: Claims 20-21 are rejected over Hsieh in view of Tower with the same arguments as stated above for claims 4-5 and 11.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsieh et al. (U.S. Patent No. 5,559,971) in view of Tower, and in further view of Hsieh et al. (U.S. Patent No. 5,428,750)

Referring to claims 3 and 12: Hsieh's 971 Patent's disclosure and Tower's teaching have been stated above, and Hsieh's 971 Patent discloses a write enable signals (column 1, lines 39-41). In addition, Hsieh's 750 Patent discloses a crossbar (figure 5, structure 74) with a row decoder (figure 5, structure 97). The row decoder functions as to enable or disable the crossbar's row (column 6, lines 62-65); therefore, the decoder enables the routing circuit to control whether signals are to be routed there through. Although the 750 Patent's crossbar's input ports are located at different position than the 971's crossbar's input ports, it teaches one to disable or enable any triangular crossbar's row. Hence, it would have been obvious to one having ordinary skill in the art to adapt the teachings of Tower and Hsieh's crossbar disabler onto Hsieh because the disabler provides a uniformed control on the data source and enables the crossbar to selectively choose the data source.

Referring to claim 13: Claim 13 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 6.

Referring to claim 22: Claim 22 is rejected over Hsieh in view of Tower as stated above; furthermore, each of Hsieh's triangular crossbar's routing cells has a respective outputs coupled to a logic circuit (971's figure 2, structure 34) for providing a common column output (971's column 1, lines 53-54), and said common column output coupled to a pin driver (750's figures 1-3, and figure 5, structure 70).

Referring to claims 23-24: Claims 23-24 are rejected over Hsieh in view of Tower with the same argument as stated above for claims 10 and 11.

Referring to claim 25: Claim 25 is rejected over Hsieh in view of Tower as stated above; furthermore, Hsieh's 971 Patent discloses each routing cell of a row receives the same signal input (column 1, lines 53-54).

Referring to claim 26: Claim 26 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 3; furthermore, since Hsieh's 750 Patent's address decoder can disable each row from accepting signal, it is said each routing cell of a row receives a common select signal for selection whether the input signal to the row is to be couple to an output of the matrix. In addition, Hsieh's 971 Patent also discloses a write enable signals (column 1, lines 39-41).

Referring to claim 27: Claim 27 is rejected over Hsieh in view of Tower with the same argument as stated above for claims 6, 19, and 22.

Referring to claim 28: Claim 28 is rejected over Hsieh in view of Tower with the same argument as stated above for claims 1 and 3. Hsieh's 971 Patent discloses that each cell of a crosspoint array has a switch for routing the signal (column 1, lines 21-42), and Tower teaches a priority-setting mean for each communication port and signal. Although the prior arts only declare a priority-setting mean and do not explicitly declare each cell's switch includes the priority-setting mean, it has been held that the mere duplication of the essential working parts of a device involves only routine skill in the skill in the art (See St. Regis Paper Co. v. Bemis Co., 193 USPQ 8).

Referring to claim 29: Claim 29 is rejected over Hsieh in view of Tower with the same argument as stated above for claims 4 and 5.

Referring to claim 30: Claim 30 is rejected over Hsieh in view of Tower with the same argument as stated above for claims 4-5 and 10-11.

Referring to claim 31: Claim 31 is rejected over Hsieh in view of Tower with the same argument as stated above for claims 3 and 22. Since the disabler can block the intended input data by controlling the switches, it is said disabler is a circuit for carrying a signal to determine whether any input can be accepted and whether that input will be routed to an output. And either the input or output can be I/O pin.

Referring to claim 32: Claim 32 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 17.

Referring to claim 33: Claim 33 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 5.

Referring to claim 34: Claim 34 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 1.

Referring to claim 35: Claim 35 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 6.

Referring to claim 36: Claim 36 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 17.

Referring to claim 37: Claim 37 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 3.

Referring to claim 38: Claim 38 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 22.

Referring to claim 39: Claim 39 is rejected over Hsieh in view of Tower as stated above; furthermore, the Hsieh's triangular crossbar is a matrix including a lack of routing cells at one or more intersections of the rows and columns (971's column 1, lines 48-50).

Referring to claim 40: Claim 40 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 22; furthermore, Hsieh discloses that the receiving circuit also receives data signals not coupled through the matrix (750's figure 5, structures 70 and 76).

Referring to claims 41-42: Claims 41-42 are rejected over Hsieh in view of Tower as stated above; furthermore, Hsieh discloses a combination of microprocessor and plural chip terminal pins integrated with the routing circuit on a semiconductor chip (750's figure 1-5).

Referring to claims 43-44: Claims 43-44 are rejected over Hsieh in view of Tower as stated above; furthermore, Hsieh discloses a register controlling by a microprocessor for selecting which signal resources are to be routed through (750's figure 5, structure 89).

Referring to claim 45: Claim 45 is rejected over Hsieh in view of Tower with the same argument as stated above for claim 41; furthermore, Hsieh discloses an active buffer for preventing signals from degrading (750's column 2,lines 40-45). An "Official Notice" is taken on the following: it is know to one in the computer art to specify a crossbar's output as high-impedance.

***Conclusion***

12. The prior art made of recorded and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,807,183 to Kung et al.: Kung teaches that it is known to set a crossbar's output as high-impedance.

U.S. Patent No. 3,984,819 to Anderson: Anderson teaches a data processing interconnection in a triangular layout.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin King whose telephone number is (703) 305-4571. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephones are unsuccessfully, the examiner's supervisor, Peter Wong can be reached at (703) 305-3477.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose number is (703)-306-5631.

Justin King
September 27, 2002

PETER WONG
SUPERVISORY PATENT EXAMINER
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